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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/790,019	03/02/2004	Tatsuya Yasunaga	249210US0	3568

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EXAMINER

FISCHER, JUSTIN R

ART UNIT PAPER NUMBER

1733

DATE MAILED: 09/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/790,019

Applicant(s)

YASUNAGA ET AL.

Examiner

Justin R. Fischer

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 30 June 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takayama (JP 2002096403, newly cited) and further in view of Heishi (US 4,974,654, of record), Shemenski (US 4,446,198, newly cited), and Rubber Technology and Manufacture (RTM, newly cited). It is initially noted that a machine translation of Takayama is also included and will be relied upon below.

Takayama is directed to a method of forming a composite material or tire, wherein a green tire is preheated at a temperature between 60 and 100 degrees Celsius prior to vulcanization (Paragraph 18). In this instance, the reference specifically states that "metal wire" is included inside the unvulcanized tire at the bead region (Paragraphs 14 and 18) and while the reference fails to expressly teach that the metal wires are brass plated, it is extremely well known and conventional in the tire industry to brass plate metal wires in the tire industry- such a plating is well recognized as improving adhesion between a metal wire and the surrounding rubber. Heishi (Column 1, Lines 14-27), Shemenski (Column 1, Lines 5-26), and RTM (Page 296 and 400) evidence the well known and conventional use of brass plating with metal wires in the

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tire industry. It is emphasized that RTM recognizes the known use of brass plating dating back to the middle of the 19<sup>th</sup> century and more importantly, recognizes the modern day use of brass plating in specialized industries, particularly tires. Given these teachings, one of ordinary skill in the art at the time of the invention would have found it obvious to brass plate the metal wires of Takayama. Thus, the method of Takayama would involve pre-heating a tire assembly having brass-coated, metal wires in at a temperature between 60 and 100 degrees Celsius- this method would result in the claimed needle-like reaction products as they are formed as a direct result of the above noted method.

Furthermore, with respect to claims 1, 5, and 6, it appears that the claimed dimensions (of the needle-like reaction products) would naturally result from performing the above-noted method on the tire of Takayama in view of Heishi, Shemenski, and RTM.

As to claim 7, the preheating temperature of Takayama can be as high as 100 degrees Celsius, which is directly in the middle of the claimed range.

Regarding claims 8 and 9, the disclosed brass makeup is consistent with that commonly used in the tire industry, as shown for example by Shemenski (Abstract).

With respect to claim 10, while Takayama is silent as to the length of preheating, the claim defines a broad range of values and one of ordinary skill in the art at the time of the invention would have been able to appropriately select the desired amount of preheating as a function of, among other things, the specific tire being manufactured. Additionally, applicant has not provided a conclusive showing of unexpected results for

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a time between 2 and 20 minutes. First, the results of Table 1 suggest that an assembly preheated for 20 minutes is substantially the same as an assembly preheated up to 26 minutes (long term adhesion is actually the same or better at 2 of the 3 experimental times). Second, it is art recognized that bonding between brass coated reinforcing elements and rubber reaches a maximum during heating or vulcanization and additional heating actually degrades the bond (see Shemenski- Column 1, Lines 30-45). Thus, it is not "unexpected" that the degree of adhesion would decrease upon increased heating.

### ***Response to Arguments***

3. Applicant's arguments with respect to claims 1-10 have been considered but are moot in view of the new ground(s) of rejection.

Applicant argues that the references do not describe or suggest a composite material having a "section of the bonding interface between brass and rubber" in which "1 to 50 needle-like Cu-S based reaction products having a length L of 10 mm or more and a ratio of length L to the width W (L/W) of 5 or more are existent based on 1 micron in the length of the section of the bonding interface".

It is agreed that Takayama fails to expressly describe the claimed needle-like reaction products. However, said products appear to naturally result from preheating a brass coated, metal wire at a temperature between 80 and 120 degrees Celsius and such a method would have been obvious in view of Heishi, Shemenski, and RTM. In particular, the combination of references clearly recognizes the well known and conventional use of brass plating in metal reinforcements used in the tire industry. It is

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emphasized that the references recognizes, as is well known, that the inclusion of brass plating provides improved adhesion between the reinforcing elements and the surrounding rubber. Thus, the fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985). In this instance, the prior art clearly suggests including a brass plating in the steel reinforcement elements of Takayama.

In regards to the secondary references, the combination of references clearly recognizes the well known and conventional use of brass plating in the tire industry. The references have been applied to generally disclose the common use and well recognized benefits of brass plating in the tire industry. One of ordinary skill in the art at the time of the invention would have been amply motivated to brass plate the steel reinforcement elements of Takayama in order to provide improved adhesion. It is emphasized that brass plating is extensively used in modern day tire construction and applicant has not provided a conclusive showing of unexpected results to establish a criticality for the claimed method. As detailed above, the results of Table 1 suggest that an assembly preheated for 20 minutes is substantially the same as an assembly preheated up to 26 minutes (long term adhesion is actually the same or better at 2 of the 3 experimental times). Additionally, it is art recognized that bonding between brass coated reinforcing elements and rubber reaches a maximum during heating or vulcanization and additional heating actually degrades the bond (see Shemenski-

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Column 1, Lines 30-45). Thus, it is not "unexpected" that the degree of adhesion would decrease upon increased heating.

### ***Conclusion***

4. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Justin R. Fischer** whose telephone number is **(571) 272-1215**. The examiner can normally be reached on M-F (7:30-4:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on (571) 272-1226. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
Justin R Fischer  
Primary Examiner  
Art Unit 1733

JRF  
September 7, 2006